

# **Global Research Libraries Asia - Programme Committee Professional Profiles & Position Papers**

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Donatella Castelli has been a Senior Researcher since 1988. She graduated in Computer Science at the Department of Computer Science of the University of Pisa & was a researcher there before joining ISTI-CNR. Since 1996 she has been the principal investigator of several EU & National funded projects on digital libraries acquiring extensive experience in this domain. In particular, she is currently the scientific coordinator of the D4Science project, whose objective is to deploy a production digital library infrastructure on grid-enabled technologies addressing the needs of scientific communities affiliated with the broad disciplines of Environmental Monitoring and Fishery and Aquaculture Resource Management. She is technical coordinator of DRIVER II - creating a European infrastructure of institutional repositories. She is also the principal investigator of DL.org, an EU funded Coordination Action dedicated to delivering a Reference Model for Digital Libraries and to identifying best practices and solutions for achieving interoperability among large digital libraries systems. Her current research interests include digital library architectures and infrastructures, information object modelling and interoperability.

### **GRL2020 Position Paper**

#### **Creating a Research Library that preserves the past, present and curates the future**

Today research activities require collaborations among parties that are widely dispersed and autonomous. Collaborations are often cross-discipline and may rely on virtual research environments that make available data, processing and interaction intensive workflows to produce new knowledge able to stimulate further research.

There is growing evidence that the requirements raised by cross-disciplinary research may not be satisfied within the boundaries of a single digital library (DL), regardless of how wide in geographical scale and in aggregating resources it can be. Rather, the expectation is that scientific collaboration will need to span across multiple DLs involving scientists and resources from different institutions, disciplines and countries.

Complying with current scientific enquiry thus requires new organizational patterns able to support interoperability and uniform access to the large variety of heterogeneous of resources. The solution to this important requirement cannot certainly be the realization of a single global research infrastructure merging all the community or discipline-oriented resources. There are too many financial, organizational, and technological reasons that will prevent the realisation of this solution. A more powerful and flexible organizational pattern capable of supporting interoperability and collaboration without forcing everyone to comply with a single model must be introduced.

The Knowledge Ecosystem pattern is recently emerging as a possible answer to this need. In a Knowledge Ecosystem, different scientific DLs, although independent, are not isolated but dynamically interoperate and influence each other. They may share not only information, but also services needed to analyse and process the available information. DLs belonging to the ecosystem can offer a specific functionality to their user communities by outsourcing it to another component of the same ecosystem. In this way, the community served by a specific DL can benefit of innovative applications although the DL, for reasons related to risk, cost, and scope, does not plan to include them in its roadmap for evolution. In an ecosystem, the capability of a DL to serve its client communities is thus indirectly influenced by the capabilities of others and dynamically evolves following the modifications of the ecosystem participants. A DL can become dominant in the ecosystem because it exposes widely used information and/or key functionality. It is expected that the other DLs will make an effort for complying with the rules of the dominant DL in order to better interoperate with it. However, even if dominant, a DL will always coexist and compete with others. Researchers will still have access to their specialized DLs and the dominant role over time may be taken by other DLs that adopt more powerful innovative solutions and make available a richer set of resources.

The realisation of a “Knowledge Ecosystem” will require a considerable technological and organisational effort. It will also likely involve considerable rethinking of the role and processes performed by research libraries, especially concerning key activities like the stewardship of digital data. It is essential that we now start to deal with these issues if we want to be able to respond to the new challenges that modern science imposes. In this respect GRL2020, which brings together scientists and stakeholders of different domains from different countries, marks itself as the event where such issues can best be addressed. It is my expectation that at GRL2020 Asia we can gain a more accurate understanding of Knowledge Ecosystems and define which steps can make us advance in this direction.